

**Chapter 1: Introduction**

You will learn:

- The relationship between C# and .NET.
- The components of a windows program.
- The components of the .NET Framework.
- The components of a C# program.
- How to compile and run a program using the command line.
- How to compile and run a program using the IDE Visual Studio.
- How to create a simple console, window, and component application.

**Chapter 2: Language Fundamentals**

You will learn:

- The structure of a C# program.
- The purpose and functionality of a namespace.
- What a class is.
- The purpose and use of the Main method.
- How to code simple console I/O: input/output.
- What a variable is.
- The purpose and function of C# built-in types.
- C# operators.
- The purpose and function of arrays.
- if statements.
- The switch statement.
- How break is used in switch statements.
- The proper use of the goto statement.
- The while loop.
- The do loop.
- The for loop.
- The foreach loop.
- The structure of a method.
- How to recognize the difference between static and instance methods.
- How to instantiate objects.
- How to call methods of an instantiated object.
- The four types of parameters.
- How to use the this reference.

**Chapter 3: OOP Techniques**

You will learn:

- How to implement constructors.
- How to recognize the difference between instance and static members.
- Destructors.
- Class members.
- How to implement base and derived classes.
- How to initialize base classes from derived classes.
- Calling base class members.
- Hiding base class members.
- Polymorphism.
- How to implement a virtual method.
- The purpose and function of properties.
- How to implement a property.
- The object-oriented principle of encapsulation.
- The available modifiers for type members.
- How to protect object state through properties.
- How to control access to methods.

**Chapter 4: Windows Applications**

You will learn:

- How to create, customize, and test a window form.
- How to use a variety of controls - labels, textboxes, radio buttons, listboxes, and others.
- How to execute logic when a window is created and terminated.
- How to create, customize, and test menu strip and content menus.
- Execute logic for menu items.
- Enabling and disabling menus.
- Creating, customizing, and testing a ListView in a Form.
- How to use the ListView for displaying data and choices.
- Adding columns to ListView.
- Specifying ListView views.
- Creating, customizing, and testing a tabbed dialog in a Window form.
- How to use various controls in the tabbed dialog.
- Performing tabbed operations.
- Sizing the tabs based on the windows size.
- Creating, customizing, and testing controls on a Window form.
- The utilization of common dialogs.
- Coding and testing common dialogs.
- Coding and testing a timer control with a ProgressBar.

**Chapter 5: Web Applications and Web Forms**

You will learn:

- The advantages associated with web forms.
- Creating a web form project.
- Differentiating between HTML and server controls.
- Coding and executing a simple web form application in the Visual Studio Development browser.
- The different validators provided by Microsoft.
- How to code standard validators in Web Forms.
- Creating and coding a custom validator.
- How to differentiate between a state and stateless application.
- Managing state on the client.
- Managing state on the server.

**Chapter 6: Practical Programming**

You will learn:

- How to use collections.
- The advantages associated with collections.
- How to create and use common collections.
- How to recognize the differences in performance among common collections.
- What indexers are used for.
- How to implement an indexer.
- Overloading indexers.
- The purpose of structs.
- How to implement a struct.
- How to use a struct.
- The purpose of interfaces.
- Defining an interface.
- Using an interface.
- What an exception is.
- How to implement a routine with a try/catch block.
- Releasing resources in a finally block.
- What an enum is.
- How to create and use new enum types.
- System.Enum type methods
- The purpose and advantages of enum.
- Overriding defaults in enum.

**Chapter 7: Building Applications**

You will learn:

- How to examine objects in the .NET Framework Class Library.
- Navigating Microsoft documentation on FCL.
- Overriding methods from System.Object.
- Coding a simple override to ToString.
- Formatting strings and numbers.
- How to use strings.
- Working with dates.
- How to perform a numeric check.
- Searching a string.
- Opening and closing sequential files.
- Checking whether a file exists.
- Creating a new file.
- Reading and writing a sequential file.
- How to obtain information about a file.

**Chapter 8: ADO.NET**

You will learn:

- The architecture and functionality of ADO.NET.
- The design goals of ADO.NET.
- The utilization of XML and ADO.NET.
- Connecting to a database and performing exception handling.
- Creating a connection string.
- Opening and closing a connection.
- Creating a command string.
- Executing and processing queries.
- Creating and using connected and disconnected resultsets.
- Performing a single value select.
- Updating and inserting rows into a table.
- Creating and using the SqlDataReader.
- Creating and filling a DataSet.

**Chapter 9: Web Services**

You will learn:

- The advantages of a web service.
- How to use Visual Studio for creating a web service.
- Invoking the web service using the Visual Studio built in server and client.
- Coding a client application to invoke the service.
- Creating a web service project.
- Running the service.
- Deploying XML web service.